

every claimed element. In the present case, claims 1, 3-8 and 10-14 are not rendered unpatentable over the combination of the related art and Maurer because the Examiner fails to establish a *prima facie* case of obviousness as discussed below.

Independent claim 1 defines a reflective cholesteric liquid crystal display device. The device includes, *inter alia*, a first substrate; an absorption layer on the first substrate; a cholesteric liquid crystal color filter on the absorption layer, the cholesteric liquid crystal color filter having a plurality of protrusions, the shape, size and distribution of the protrusions being controlled to make the distribution of reflected light be uniform within a viewing angle range of about 30 degrees upward and downward from a front direction; an overcoat layer on the cholesteric liquid crystal color filter; and a second substrate.

In rejecting claim 1, the Examiner asserts that the related art teaches a reflective cholesteric liquid crystal display device as claimed with the exception of a cholesteric liquid crystal filter having a plurality of protrusion, the shape, size and distribution of the protrusions being controlled to make the distribution of reflected light be uniform within a viewing angle range of about 30 degrees upward and downward from a front direction. The Examiner further asserts that Maurer discloses an optical element having image-forming, color- and polarization-selective reflection and containing cholesteric liquid crystals. Furthermore, the Examiner asserts that the cholesteric liquid crystal layer of the optical element has a plurality of protrusions. To support this assertion, the Examiner points to FIG. 2b of Maurer. Finally, the Examiner asserts that one skilled in the art would have been motivated to modify the related art to include a cholesteric color filter with a plural of protrusions as taught by Maurer in order to form "an image without affecting transmitted light and to function as a combination color filter, polarizer and lens." This assertion is unfounded for the following reasons.

First, the mere fact that a reference can be modified is not in and of itself sufficient to

render the modification obvious. As stated in section 2143.01 of the MPEP, “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” The Examiner asserts that one skilled in the art would be motivated to modify the LCD of the related art to include a cholesteric liquid crystal layer as taught by Maurer in order to form “an image without affecting transmitted light and to function as combination color filter, polarizer, and lens,” however the Examiner fails to provide any evidence of the desirability of such functionality in a reflective LCD device according to the related art. Maurer discloses that the optical element is suitable for use as a beam splitter or recombiner in projection displays because it reduces the number of components in the projection display. However, nowhere in Maurer is there any discussion of the desirability of using the optical element in an LCD device as suggested by the Examiner.

To the contrary, the functionality (i.e., without affecting transmitted light and to function as a combination color filter, polarizer) the Examiner asserts one skilled in the art would be motivated to achieved is achieved in the related art without modification. Cholesteric color filter of the related art does not affect transmitted light and functions as a color filter and polarizer. (See paragraph [0008] of the instant application.) Accordingly, one skilled in the art would not have been motivated to modify the LCD of the related art to include a cholesteric liquid crystal layer as suggested by the Examiner. Accordingly, absent proper motivated to modify the LCD of the related art, the rejection of claim 1 is improper.

Furthermore, even if one skilled in the art were motivated to modify the LCD of the related art to include a cholesteric liquid crystal layer as suggested by the Examiner, which Applicant does not concede, the combination would still fail to render independent claim 1 unpatentable because the combination fails to disclose each and every claimed element.

Maurer discloses forming a uniform cholesteric liquid crystal layer between two

transparent substrates, the substrates having a curved surface. In addition, Maurer discloses that a plurality of the optical elements can be combined on a substrate as illustrated in FIGs. 2a and 2b. However, nowhere in Maurer is there any disclosure or suggestion of the cholesteric liquid crystal layer having a plurality of protrusions, *the shape, size and distribution of the protrusions being controlled to make the distribution of the reflected light be uniform within a viewing angle range of about 20 degrees upward and downward from a front direction*. To the contrary, Maurer discloses that the cholesteric layer has a uniform thickness while the transparent substrates have a curved surface based on the desired focal length of the optical element.

Furthermore, nowhere in Maurer is there any disclosure or suggestion of the protrusions being controlled to make the distribution of the reflected light be uniform within a viewing angle range of about 20 degrees upward and downward from a front direction. The Examiner appears to assert that the optical element of Maurer inherently discloses controlled the protrusion to make the distribution of the reflected light be uniform within a viewing angle range of about 20 degrees upward and downward as claimed because the structure of the element allegedly contributes to uniform luminance. This assertion is unfounded for the following reasons.

First, Maurer specifically discloses controlling the curvature of the substrates based on the desired focal length, not uniform luminance. Second, nowhere in Maurer is there any disclosure or suggestion that the structure of the optical element contributes to uniform luminance. Accordingly, should the Examiner maintain this reasoning, Applicant respectfully requests the Examiner more clearly point out how the structure of the optical element of Maurer contributes to uniform luminance.

For at least those reasons presented above, independent claim 1 is patentably distinguishable over the combination of the related art and Maurer.

Independent claim 6 defines a method of manufacturing a lower substrate for a reflective

cholesteric liquid crystal display device. The method includes, *inter alia*, forming an absorption layer on an insulating substrate; forming a cholesteric liquid crystal filter over the absorption layer, the cholesteric liquid crystal color filter having a plurality of protrusions, a shape, size and distribution of the protrusions being controlled to make a direction of reflected light be uniform within a viewing angle range of about 30 degrees upward and downward from a front direction; and forming an overcoat layer on the cholesteric liquid crystal color filter. In addition, independent claim 10 defines a method of manufacturing a reflective liquid crystal display device having a cholesteric liquid crystal color filter that includes, *inter alia*, patterning the cholesteric liquid crystal layer using the photoresist as a mask to form a plurality of protrusions on the cholesteric liquid crystal layer, a shape, size and distribution of the protrusions being controlled to make a direction of reflected light be uniform within a viewing angle range of about 30 degrees upward and downward from a front direction.

Claims 6 and 10 patentable distinguishable over the combination of the related art and Maurer for at least those reasons presented above with respect to claim 1. Furthermore, claims 3-5, 7, 8 and 11-14 variously depend from independent claims 1, 6 and 10. Therefore, claims 3-5, 7, 8 and 11-14 are patentably distinguishable over the combination of the related art and Maurer for at least those reasons presented above with respect to claims 1, 6 and 10. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1, 3-8 and 10-14 under 35 U.S.C. §103.

The application is in condition for allowance. Notice of same is earnestly solicited. Should the Examiner for any reason find the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. § 1.136, and any additional fees required under 37 C.F.R. § 1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

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Respectfully submitted,

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